

WHAT IS CLAIMED IS:

1. An optical waveguide comprising:

a substrate;

a core portion formed on the substrate; and

clad portions arranged on the substrate so that the core portion is sandwiched therebetween, the clad portions each having a periodic structure which exhibits a periodic variation in refractive index in a direction perpendicular to a light propagation direction,

wherein at least one of the periodic structures is inclined with respect to a surface of the substrate so that an interval between the periodic structures is gradually reduced toward the substrate.

2. The optical waveguide of claim 1,

wherein at least one of the periodic structures is inclined an angle of 5 to 60 degree from a direction perpendicular to the surface of the substrate.

3. The optical waveguide of claim 1,

wherein the two periodic structures make contact with each other at their lower ends.

4. The optical waveguide of claim 2,

wherein the two periodic structures make contact with each

other at their lower ends.

5. The optical waveguide of claim 1,
wherein the periodic structure is configured as a columnar
periodic structure.

6. The optical waveguide of claim 2,
wherein the periodic structure is configured as a columnar
periodic structure.

7. The optical waveguide of claim 3,
wherein the periodic structure is configured as a columnar
periodic structure.

8. The optical waveguide of claim 4,
wherein the periodic structure is configured as a columnar
periodic structure.

9. The optical waveguide of claim 1,
wherein a period of the periodic structure has a thickness
corresponding to 20 to 60 percent of a wavelength of light
propagating through the core portion.

10. The optical waveguide of claim 1,
wherein the periodic structure has five periods or more.

11. The optical waveguide of claim 5,
wherein column components of the columnar periodic structure occupy 20 to 80 percent of a sectional area of the columnar periodic structure sectioned along a direction perpendicular to a length of the column component.

12. An optical circuit base component comprising:
a substrate;
an optical waveguide comprising a substrate, a core portion formed on the substrate, and clad portions arranged on the substrate so that the core portion is sandwiched therebetween, the clad portions each having a periodic structure which exhibits a periodic variation in refractive index in a direction perpendicular to a light propagation direction, at least one of the periodic structures being inclined with respect to a surface of the substrate so that an interval between the periodic structures is gradually reduced toward the substrate; and
a portion formed on the substrate, for mounting an optoelectronic conversion element which is optically coupled to the optical waveguide.

13. The optical circuit base component of claim 12,
wherein, in the optical waveguide, at least one of the periodic structures is inclined at an angle of 5 to 60 degree

from a direction perpendicular to the surface of the substrate.

14. The optical circuit base component of claim 12,
wherein, in the optical waveguide, the two periodic
structures make contact with each other at their lower ends.

15. The optical circuit base component of claim 13,
wherein, in the optical waveguide, the two periodic
structures make contact with each other at their lower ends.

16. The optical circuit base component of claim 12,
wherein, in the optical waveguide, the periodic structure
is configured as a columnar periodic structure.

17. The optical circuit base component of claim 13,
wherein, in the optical waveguide, the periodic structure
is configured as a columnar periodic structure.

18. The optical circuit base component of claim 14,
wherein, in the optical waveguide, the periodic structure
is configured as a columnar periodic structure.

19. The optical circuit base component of claim 15,
wherein, in the optical waveguide, the periodic structure
is configured as a columnar periodic structure.